Cryocrystalglobulinemia after kidney transplantation: A case report

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Background:

There are only case reports published on cryocrystalglobulinemia - a rare variant of type I cryoglobulinemia characterized by immunoglobulin assembly into crystalline arrays with associated thrombosis, ischemia and infarction leading to multi-organ failure.

Case Description:

67-year-old male with end stage renal disease secondary to bilateral renal artery occlusion as a thrombotic manifestation of cryocrystalglobulinemia status post-renal transplantation in 2009. Due to the presence of an IgG kappa paraproteinemia, the patient underwent a bone marrow transplant prior to renal transplant.

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- Presented to hospital in January 2024 with diffuse livedo reticularis, marked digital ischemia, new-onset heart failure and acute kidney injury with proteinuria and persistent IgG kappa paraproteinemia seemingly precipitated by exposure to cold weather.

- Skin biopsy reported leukocytoclastic vasculitis.

- Relevant investigations included:

- Serum cryoglobulins, negative.
- Anti Cardiolipin, anti PR3, anti MPO, anti GBM, anti anti nuclear, anti beta 2 glycoprotein antibodies, negative.
- Platelet count , Factor V, Protein C and S, normal.

- There was no evidence of active Hepatitis B , Hepatitis C, Varicella Zoster, HIV, BK , Herpes or Cytomegalovirus.

- Renal biopsy revealed pseudothrombi within the glomerular capillaries and needle-like crystal formations within the tubules. Tubular crystals stained for IgG, fibrinogen and kappa light chains.

- The patient was diagnosed with **recurrent cryocrystalglobulinemia post-kidney transplant.**

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- The patient received IV methylprednisolone and plasmapheresis with no improvement in his clinical manifestations. There were plans made to complete an updated bone marrow biopsy and intensify immunosuppression.

- Unfortunately, the patient passed away from multi-organ failure related to his cryocrystalglobulinemia.

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Conclusions

- Confirming the diagnosis of cryocrystalglobulinemia is difficult and ultimately requires tissue sampling for end-organ manifestations of disease, in this case a renal biopsy. Extensive diagnostic testing and wide differential diagnoses for presentation can lead to delays in diagnosis and targeted treatment.

- It was hypothesized that this patient's recurrence of cryocrystalglobulinemia was due to exposure to cold weather.

- **This is the first reported case of recurrent cryocrystalglobulinemia post-kidney transplant.**